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# Little Calumet River Basin Commission

8149 Kennedy Ave. Highland Indiana 46322

(219) 923-1060

TO: All Interested Parties

SUBJECT: Little Calumet River Project - Draft Plan of Study

The U.S. Army Corps of Engineers have completed the Draft Plan of Study for the Little Calumet River Project - Indiana. This is the first of three stages of advanced design and engineering work prior to project construction.

The Plan of Study outlines the investigations to be undertaken, the recommended time schedule for the work, and how the study will be managed and coordinated with local agencies and concerned interests. The second stage of work will be the development of alternative plans and the third stage is the development of detailed plan to be recommended to the Congress for construction authorization.

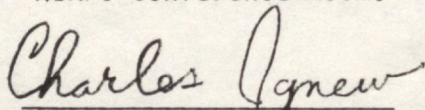
The Little Calumet River Basin Commission staff has prepared a brief summary of the Plan of Study for your review and comment. A limited number of copies of the complete study are available at the offices of the Northwestern Indiana Regional Planning Commission, 8149 Kennedy Avenue, Highland, IN 46322.

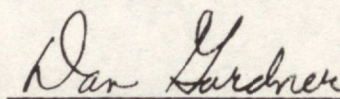
If there are any questions or comments about the study you can contact Dan Gardner, staff project director at the NIRPC offices (219/923-1060) or Doug Mayer, project manager for the Corps of Engineers at the Chicago Corps of Engineers offices, 219 South Dearborn Street, Chicago, IL 60604 (312/353-6511).

Please have all comments in by July 14 so they can be considered in preparing the final study schedule.

An informal public input session will be held from 2 p.m. to 7 p.m. on Thursday, July 13 in the Conference Room of the Northwestern Indiana Regional Planning Commission at 8149 Kennedy Avenue, Highland. Representatives of the Corps of Engineers, State of Indiana, Regional Planning Commission and the Little Calumet River Basin Commission will be present to discuss the Plan of Study and listen to comments.

On Wednesday, July 26 from 3-8 p.m. and on Tuesday, August 1 from 10 a.m.-3 p.m. there will be important public workshops to discuss features of the three alternative plans to be considered in Stage 2 design work. Proposed channel alignments and needed land acquisition will be among the topics. These meetings will be held also in the NIRPC Conference Room.

  
CHARLES AGNEW, Chairman

  
DAN GARDNER, Staff Project Director



# Little Calumet River Project - Indiana

## Draft Plan of Study - Summary

### I. PROJECT TIMETABLE

In January 1978, the North Central Division Engineer directed the Chicago District to complete Phase I General Design Memorandum in three years. A three-year schedule is identified as the "recommended schedule" of work, contingent upon sufficient funding from Congress. This time schedule is two years less than the five-year optimum schedule of work. Consequently, study times will be compressed, fewer alternative plans will be generated, and times for review and coordination will be substantially reduced. This compressed time schedule will require active participation and review by all concerned agencies and parties if a successful design and time schedule are to be achieved. Below is an outline of the three-year schedule of work.

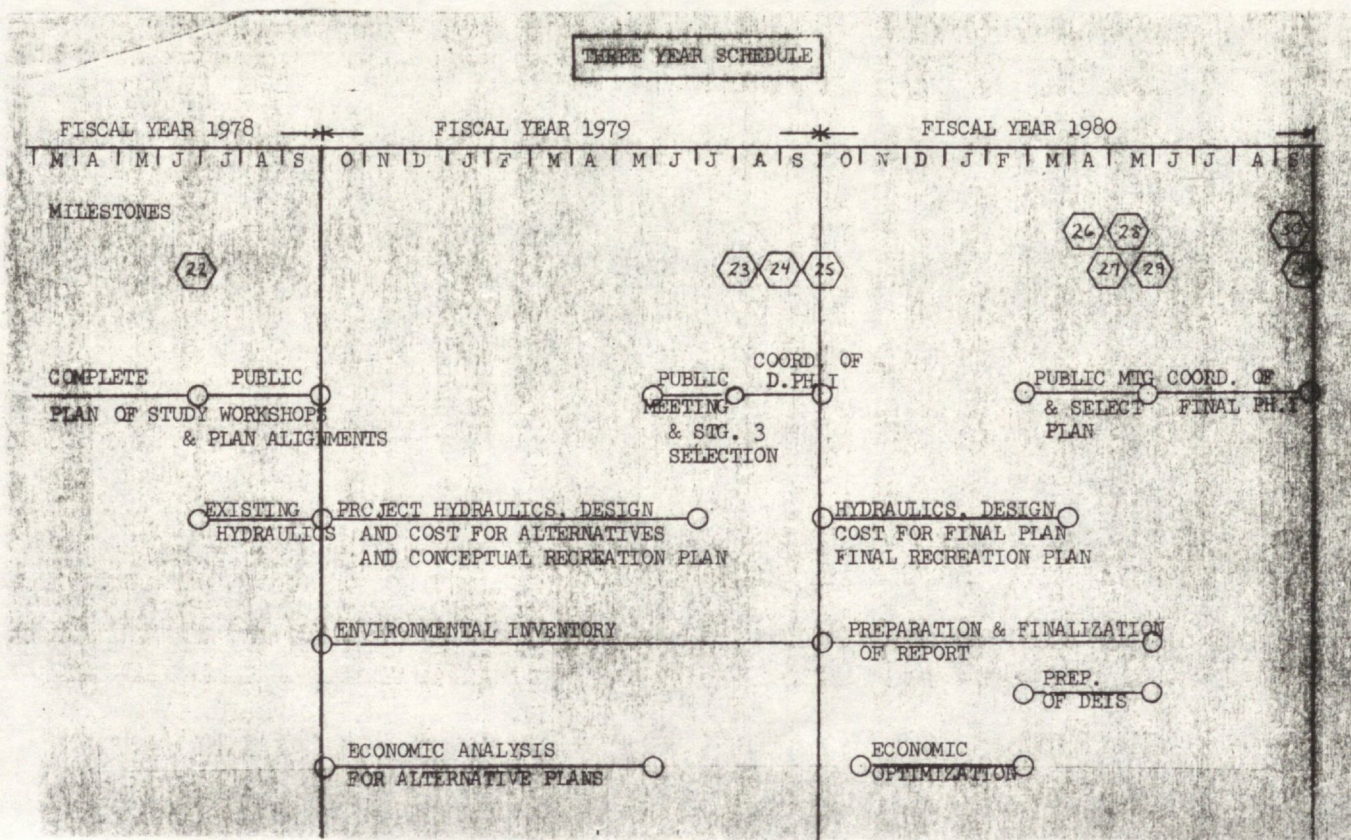
There are three stages to Phase I advanced engineering and design work. The first stage is the development of a Plan of Study. This is the document you are reviewing. The Plan of Study provides the framework for issue discussion, timetable for work elements, and determination of how the design work will be coordinated and managed.

The second stage of Phase I is the development of alternative plans exploring the potential ways to manage the flood control, recreation and recreation goals of the project. This effort will begin with the public workshops on July 26 and August 1 when alternative alignments and plans will be discussed.

The Third stage is the development of detailed plans where the alternatives are refined and a single plan is readied for recommendation to Congress for construction authorization.

An environmental impact assessment is prepared and the plan is reviewed by federal, state and local agencies for recommendation to Congress. If the plan is authorized for construction Phase II detailed design and specifications are begun and private construction firms are invited to bid for construction of the the project.

It is hoped that the Phase I work will be completed in three years and construction authorized as soon as possible thereafter.





## II. STUDY OBJECTIVES

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The plans for the Little Calumet River Project will be based upon certain federal, state and local objectives for the project and the effected area. The objectives for the project are listed below:

- A. Reduce flood damages along the Little Calumet River main stem.
- B. Reduce flood damages along Turkey Creek.
- C. Reduce flood damages along Hart Ditch.
- D. Provide recreational navigation and associated facilities along Burns Waterway and Burns Ditch.
- E. Provide a recreational corridor for passive activities along the Little Calumet River.
- F. Preserve open space in Lake and Porter Counties.
- G. Preserve the remaining productive wetlands adjacent to the Little Calumet River and other wetland areas in the study area to the maximum extent practicable.
- H. Conserve water quality throughout the basin.
- I. Conserve and enhance fish and wildlife resources throughout the basin.

## III. PLAN CRITERIA

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The formulation and evaluation of a plan, including the screening of alternatives, is made within the context of evaluation criteria. Technical, economic, environmental and intangible criteria. Below are listed the project review criteria:

### Technical Criteria

- A. A minimum of 100-year flood protection to be provided in urban areas.
- B. A minimum of three feet of freeboard above the design high water to be included in levee heights, vertical clearances, and channel improvements.
- C. Waterway openings beneath bridges for open channel flow will provide uninterrupted stream flow.
- D. Flood damage reduction will be provided by self-operable flood protection facilities.
- E. Flood protection provided within the study area will not result in increased flood levels in other portions of the river basin.
- F. The recreational navigation entrance channel will have a 10-foot project depth; other up-river channels will have a depth of 8 feet. The design depth used for the entrance channel, maneuver area, and access channel to the first marina is 10 feet LWD. This depth is based on a design water level of 1-foot LWD; a vessel draft of 6 feet, which include 97 percent of the recreational boats operating on Lake Michigan; a nominal squat of 1-foot; a 1-foot allowance for wave fluctuation in the entrance channel and maneuver area; plus a clearance of 1-foot under the keel while a recreational boat is underway.



- G. Flood damage reduction features will be designed based on the assumption that the U.S. Department of Agriculture, Soil Conservation Service (SCS) plan for flood damage reduction on the Illinois portion of the Little Calumet River Basin as outlined in their report dated March 1978 is in place and operating. The SCS report is expected to be submitted to the Congress in Fiscal Year 1979 for consideration of a construction authorization.
- H. Hart Ditch flood flows will be diverted east. Flows will be divided at the mouth of Hart Ditch, with low flows being diverted west up to bank-full capacity between Hart Ditch and Thorn Creek, based on implementation of the SCS plan cited in Item G above.
- I. Existing spoil bank levees will be assumed to fail. An analysis is currently being made of the strength and stability of the levees. Based on this analysis, a determination will be made of the flood elevation at which the levees will fail.
- J. The initial design of alternatives in Stage 2 will be based on providing for 150-year flood protection. The analysis of maximization of net benefits completed in connection with the survey report indicated that benefits were maximized close to this level of protection. Therefore, 150-year flood protection will be used as a basis for the initial screening of alternatives. A maximization of net benefits analysis will be completed for the alternative selected for final planning and design in Stage 3.

#### Economic Criteria

The general economic guidelines to be followed are specified by the "Principles and Standards for Planning Water and Related Land Resources" 10 September 1973, by Public Law 93-224, Flood Disaster Assistance Act of 1973, and Public Law 93-251, Water Resources Development Act of 1974. Together, these documents provide the policy and the general framework for water resource planning, as well as providing for the uniform and consistent comparison, measurement, and judgment of beneficial and adverse impacts of alternative plans. Below are listed the economic criteria:

- A. Enhancement of national economic development by increasing the value of the Nation's output of goods and services and improving national economic efficiency.
- B. Tangible benefits exceed project economic costs.
- C. Each separable unit of improvement or project purpose should provide benefits at least equal to its cost.
- D. The scope of the NED plan is such as to provide the maximum net flood control benefits.
- E. The benefits and costs will be expressed in comparable quantitative economic terms to the fullest extent possible. The costs of all alternatives will be based on price levels at the time of the study. Annual costs will be based on a 100-year amortization period and the applicable interest rate for formulation purposes. The annual costs will include the cost of maintenance and replacement.



## Environmental and Other Criteria

The following environmental and intangibles will be considered in the formulation of the plans:

- A. Protection of the remaining productive wetlands adjacent to the Little Calumet River to the maximum extent practicable.
- B. Minimization of adverse effects upon flora, fish and wildlife.
- C. Provision of environmental enhancement where possible.
- D. Enhancement of aesthetic qualities.
- E. Avoid further degradation of existing water quality.
- F. Minimization of disruption of families and communities.
- G. Protection of public health and safety, including the reduction of loss of life.

## IV. IDENTIFICATION OF WATER RESOURCE MANAGEMENT MEASURES

Various structural and non-structural means are available to satisfy the planning objectives. Potential measures which could be used to satisfy the flood damage reduction objective could include flood-proofing; flood-plain evacuation; floodplain zoning; building codes; flood forecasting; tax adjustment; flood walls and levees; excavated and natural floodwater storage, multiple-purpose reservoirs; and channel modifications. To fulfill the recreational management objective, consideration could be given to public acquisition of additional lands for parks and parkways; development of new facilities; expansion and rehabilitation of existing facilities; regulation of the use of existing facilities; improved public access; and provision of additional hiking, nature, bicycle, and canoe trails. Specific improvements for recreational navigation could include channel deepening, development of marina facilities, and providing higher bridge clearances over the channel. Lakeshore harbors could also be developed. To conserve water quality, consideration could be given to low flow augmentation, landscaping methods, and other means where applicable.

## V. DEVELOPMENT OF ALTERNATIVE PLANS

The survey report of flooding problems, recreation navigation and outdoor recreation needs in the Little Calumet River Basin in Indiana was completed in December 1973. This study was forwarded to Congress in September 1976 and authorized for Phase I General Design Memorandum in the 1976 Water Resources Development Act: 1977 saw the first federal appropriations for this study - \$150,000. This survey plan along with recent state and local plans, concerns and suggestions will be used to generate the recommended design plan for construction. The first stage of this is the generation of a series of alternative measures to accomplish the study objectives.

The Phase I GDM flood damage reduction studies will include consideration of excavated flood water storage in conjunction with main stem channel improvements, combinations of non-structural and structural measures, and alternative channel and levee combination plans. Alternative plans will be developed in an attempt to provide a more cost effective plan, to coordinate with current local plans and views for development of the area,



and to be more environmentally and socially acceptable. Alternative means of providing for the recreational boating demand in the study area will include consideration of a shorter navigable reach and alternative marina locations. The outdoor recreation plan developed in the survey report will be modified to be consistent to the maximum extent possible with the State of Indiana's current concepts for expanded recreational development in northwest Indiana.

Turkey Creek. Following completion of the survey study, Congressmen Adam Benjamin and Floyd Fithian requested additional study of specific flood problem areas on certain tributaries of the Little Calumet River. In response to these requests, representatives of the Chicago District, the Northwestern Indiana Regional Planning Commission, and the local community completed a field investigation of the Turkey Creek floodplain from its mouth at Lake George upstream to Route 30 on 3 March 1978. In the town of Merrillville, Indiana, the flow of Turkey Creek is restricted by inadequate bridge openings resulting in overbank flooding. Water ponds between I-65 and West 61st Avenue but causes limited basement flooding. Upstream of 61st Avenue, basements were threatened by overbank flooding in the past, but a new bridge over Turkey Creek has alleviated the stream restriction. At Route 53, two structures are subject to flooding. At Route 55, flood waters in the past have covered the backyards of several houses but have not entered the basements. Upstream of the C&O railroad, overbank flooding of open space has resulted in the area being undeveloped.

Several drainage ditches tributary to Turkey Creek are subject to overbank flooding in Merrillville. A small number of houses are subject to basement flooding at various locations throughout the area adjacent to these ditches. The only structure that faces serious damage is a commercial establishment at the corner of 73rd Avenue and Madison Street. This structure is built over the confluence of two drainage ditches. Water rises to two feet deep in the intersection and causes traffic delays.

Overbank flooding of Turkey Creek in the town of Schererville causes only minor damages. The flooding problem in and near Schererville is caused by inadequate drainage. Part of an area bounded by Cline Avenue, Joliet Street, Route 73, and 213th Street floods every spring. The area is flat, lacks drainage, and is between the Turkey Creek basin and Spring Street Ditch basin. After a rainfall, water has nowhere to drain and ponds in the area. However, damage is minor due to a lack of development and structures without basements.

Due to the undeveloped nature of the Turkey Creek basin, overbank flooding does not cause significant damage. The damages that do occur generally result from flooding of basements. There are numerous small damage areas but they are at various hydraulically unrelated locations. The cost to implement flood damage reduction improvements at the various locations, compared to the resulting benefits at each area, would not justify Federal involvement.

The construction of on-line reservoirs or excavated flood water storage areas in the Turkey Creek basin to reduce the size of the recommended channel improvements along the Little Calumet River mainstem is not feasible. The restrictive bridge openings along Turkey Creek cause



ponding of water upstream of the bridges. This storage, in combination with the dam at Lake George, would dampen out the effects that any additional storage of water along Turkey Creek would have on the economical feasibility of reducing the channel size along the Little Calumet River mainstem.

Hart Ditch. On 20 March 1978, a second field investigation of the Hart Ditch floodplain in the town of Dyer, Indiana, was conducted. The major damage area of overbank flooding along Hart Ditch is the right bank (looking downstream) from Sheffield Avenue to the Indiana-Illinois State Line. The major land-use of this area is a sub-division consisting of over 100 houses. A large percentage of the houses are subject to flooding of the first floor or basement.

## VI. IMPACT ASSESSMENTS

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A detailed impact assessment and evaluation have not been completed at this stage of the Phase I GDM study. An assessment and evaluation of the economic, environmental, and social impacts of all alternatives to be investigated will be carried out during the following study stages. The Phase I GDM alternative plans will be formulated to reduce costs and adverse environmental and social impacts while maintaining economic feasibility. Therefore, it is expected that the resultant impact assessment will show decreased adverse impacts and increased beneficial impacts as compared to the survey report plan. A detailed assessment of the impact of alternative plans upon stream water quality will also be made.

Each alternative plan will be evaluated to establish its significant beneficial and adverse impacts and contributions to the Principles and Standards system of accounts. A trade-off analysis will be conducted to analyze the comparative contributions of the alternative plans. The alternative(s) which appear to best meet the criteria for the EQ and NED plans will be designated as a basis for subsequent iterations.

Turkey Creek and Hart Ditch. There has been no previous impact assessment of plans for improvements on the tributaries. A preliminary assessment of the problems on Turkey Creek indicates that economic benefits of any plan for flood damage reduction would be minimal. The potential for reduction of flood damages along Hart Ditch is considered to be substantial. It does not appear that there would be significant environmental or social impacts associated with the potential flood damage reduction alternatives for Hart Ditch.

Since much of the Turkey Creek flood plain is currently undeveloped and damages are occurring to isolated structures, it is concluded that no federal involvement in implementation of flood damage reduction measures is warranted. However, there are several actions that could be undertaken by local governments and individuals to reduce existing and prevent future flood damages. New development should be controlled by planning and flood plain zoning. On-site retention of stormwater could be required to avoid substantial increases in future flood volumes. The replacement of existing bridges and the construction of new bridges should be built with proper bridge openings so as not to cause significant flood damages either upstream or downstream.



To minimize damages to existing structures, flood-proofing should be undertaken on an individual basis, and the waterways should be kept free of debris. Damages from inadequate drainage could be alleviated by improving local drainage on a case by case basis.

It is concluded that flood damages occurring along Hart Ditch in Dyer are significant enough to warrant further study. Any proposal to reduce flood damages from Hart Ditch overflow near Sheffield Avenue would be hydraulically independent of the flood damage reduction project proposed for the Little Calumet River, and benefits would directly accrue to the Town of Dyer only. Since the flood problems of Hart Ditch in Dyer are independent of the mainstem Little Calumet River, the District Engineer concludes that consideration of local protection along Hart Ditch should not be included in the Phase 1 General Design Memorandum study for the Little Calumet River. However, the Town of Dyer is encouraged to consult the Chicago District Engineer to discuss the possibility of a remedial flood damage reduction project under the authority of Section 205 of the 1948 Flood Control Act (Public Law 80-858), as amended.

## VII. STUDIES TO BE UNDERTAKEN

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The following is a brief listing of the specific study elements to be undertaken toward the generation of a recommended plan for transmission to Congress for construction authorization:

01. Public Involvement. Public participation program is intended to involve local residents, appointed and elected officials, and appropriate local, state, regional and federal agencies in the generation of an acceptable plan for construction. Elements of the Public Involvement Program are: 1) Notification of Plan of Study; 2) Coordination of comments on Plan of Study; 3) Newsletter to be published periodically giving plan progress; 4) Stage 2 Workshops on Problem Identification, Formulation of Alternatives, Impact Assessment, and Evaluation; 5) Stage 2 Public Meeting; 6) State 3 Workshops on Plan Screening and Review of Documents; and 7) Stage 3 Public Meeting.

02. Institutional Studies. Includes the determination of the financial and legal agreements required to implement the recommended plan.

03. Social Studies. Social profile and inventory data, and social impacts of all alternative plans.

04. Cultural Resources. Historical, cultural and archeological inventory.

05. Environmental Studies. Environmental inventory, and systematic environmental impact statements of alternative plans.

06. Fish and Wildlife Studies.

07. Economic Studies. Base economic profile, economic benefits of proposed flood protection alternatives, and other economic impacts and assessments of the alternative plans.



08. Surveying and Mapping.

09. Hydrology and Hydrolics Investigations. Analysis of existing hydrolics of the basin.

10. Foundation and Materials Investigations. Analysis of foundation data for alternative plans.

11. Design and Cost Estimates. Cost estimates of alternative plans.

12. Real Estate Studies. Preliminary cost appraisals of land, re-settlements, and damages required for economic evaluations for various alternatives.

13. Study Management.

15. Report Preparation.

20. Water Quality Studies. Because of the major concern of water quality within the Little Calumet basin, a specific subaccount has been established for this feature. The work effort required includes: coordinating the Corps of Engineers' work with the local Section 208 work, analyzing the impacts of the considered Little Calumet River Improvements on the quality of water, and analyzing various methods which could improve water quality if needed to avoid degrading the existing quality. These efforts will be conducted by the Hydrology and Hydraulics Branch, by the Corps of Engineers' Hydrologic Engineering Center, and by contract.

21. Recreation Studies. Studies to assess the base recreation resources available, recreation needs by type, and development and location of recreational facilities. Additionally, the State Design Plan for the Little Calumet River will be coordinated.

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## VIII. CONTROVERSIAL ISSUES

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### Water Quality

The plan recommended in the survey report is a channel excavation plan with levees and nine pumping stations to relieve interior drainage and unrestricted flow. Low flow dams would be constructed to pond water within the enlarged channel for fishing and recreation. A control structure at the mouth of Hart Ditch would divert flood flows to the east. During low flows the dams would pond water that may become stagnant. This effect could produce water quality problems. During periods of flood flows with the recommended plan in place, a greater amount of water will drain into Lake Michigan than under current conditions. This is a result of the unrestricted flow, extra water being diverted at Hart Ditch, and interior drainage being pumped into the channel. Because of the combined sewer situation in the study area and the existing polluted nature of the Little Calumet, additional flows to Lake Michigan could result in significant additional pollutants being deposited in Lake Michigan. This effect could cause serious environmental problems. The severity of this potential problem is unknown at this time. The GDM studies will include a model of existing water quality conditions and of expected conditions with the plan of improvement in place. The plan will include methods of assuring that the water quality condition will not be worsened.



## IX. STUDY REVIEW

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The proposed study schedule for Phase 1 is three (3) years. For this study and the subsequent selection of a plan to be recommended to Congress for construction authorization -- significant public and agency participation must be forthcoming and coordinated early in the program. Public input and contact must be maintained for a successful and acceptable final plan. If there are any questions at any time contact either:

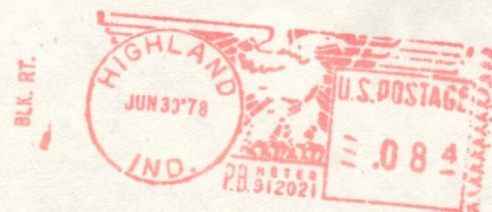
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